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Indian Standard

AUTOMOTIVE VEHICLES – ELECTRONIC FLASHERS – SPECIFICATION

UDC 629·11·018·5

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

September 1991 **Price Group 2**

Automotive Electrical Equipment Sectional Committee, TED 11

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Electrical Equipment Sectional Committee had been approved by the Transport Engineering Division Council.

In the preparation of this standard, assistance has also been derived from ISO 4082 'Road Vehicles — Motor Vehicles — Flasher Units' issued by the International Organization for Standardization (ISO).

AMENDMENT NO. 1 OCTOBER 1993
TO
IS 13135 : 1991 AUTOMOTIVE VEHICLES — ELECTRONIC FLASHERS — SPECIFICATION

(*Page* 2, *clause* **5.3**) — Substitute 'overload strength' *for* 'oversize resistance'.

[*Page* 2, *clause* **6** (a) (viii)] — Add the following new serial number:

'ix) Overload strength test.'

(*Page* 3, *clause* **6.2.4**, *fourth line*) — Substitute 'second' *for* 'seed'.

(*Page* 4, *clause* **6.11.1**, *second para, second line*) — Substitute '5 mΩ' *for* '5 m'.

(TED 11)

Reprography Unit, BIS, New Delhi, India

Indian Standard

AUTOMOTIVE VEHICLES – ELECTRONIC FLASHERS – SPECIFICATION

1 SCOPE

1.1 This standard specifies requirements and methods of tests for electronic flashers for automotive applications, working on 6, 12 and 24 V battery system for direction and for hazard warning.

2 REFERENCES

IS No.	*Title*
1248 (Part 1) : 1983	Specification for direct acting indicating analogue electrical measuring instruments and their accessories : Part 1 General requirements (*second revision*)
10250 : 1982	Specification for severities for environmental tests for automotive electrical equipment.
10673 : 1983	Sampling plans and procedures for inspection by attributes for electronic items.

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Direction Indicator

A lighting device to show in which direction the driver intends to turn by giving a flashing light on the side of the vehicle towards which the turn will be made.

3.2 Hazard Warning Indicator

A vehicular hazard warning indicator is a device which, as long as it is turned on, causes at least one signal lamp on the left and right to the front and left and right to the rear of the vehicle to flash simultaneously to indicate to the approaching driver, the presence of a vehicular hazard.

3.3 Flasher (Flasher Unit)

It is a device designed to make the direction indicator/hazard warning unit flash intermittently at a specified frequency when driver of the vehicle intends to turn the vehicle to the right or to the left of his path.

3.4 Defects

Failure to meet the requirement imposed on an item with respect to a single characteristic.

3.5 Type Tests

Tests carried out to prove conformity with the specification. These are intended to prove the general qualities and design of a given type of flasher.

3.6 Acceptance Tests

Tests carried out on samples taken from lot for the purpose of acceptance of the lot.

3.7 Routine Tests

Tests carried out on each flasher to check requirements which are likely to vary during production.

4 CONSTRUCTION REQUIREMENTS

4.1 The flasher shall have such a construction that fails/becomes inoperative if the filament of either of the two bulbs of the direction indicator fails or becomes inoperative. The driver of the vehicle shall readily recognize it by means of a pilot lamp.

4.1.1 In case of failure of a main filament lamp, the audible and/or optical operational tell-tales shall indicate the failure either by ceasing to function, or by a change of frequency as given below:

a) In the case of a frequency increase, the resulting frequency shall exceed by at least 75 percent the frequency existing originally under the same conditions; it shall, however, be at least 140 cycles/min.

b) In the case of a frequency decrease, such a decrease shall be at least 50 percent of the frequency existing originally under the same conditions, the resulting frequency shall, however, not exceed 50 cycles/min.

4.2 The flasher shall be so designed as to enable it to function between —10°C and 80°C.

4.3 The preferred mounting position is on the dash board or behind or side of dash board.

5 SAMPLING

5.1 The sampling scheme for tests shall be in accordance with IS 10673 : 1983.

5.2 Criteria for Approval

Thirty samples shall be submitted for testing. The testing authority shall issue a type approval certificate if the flashers are found to comply with the requirementss of 5.3.

5.3 For the purpose of guidance the following sampling sizes are given for various tests.

Tests		*No. of Samples*
Performance test	—	20
Vibration	—	2
Damp heat (cycling)	—	1
Dry heat	—	1
Oversize resistance	—	1
Drop	—	1
Transient	—	2
Reverse voltage	—	2

5.4 In case of failure of one or more type tests, the testing authority may call for the fresh samples not exceeding twice the number of original samples and subject them to the test(s) in which failure occurred. If, in repeat test(s) no failure occurs, the test may be considered to have been satisfactory.

6 TESTS

a) The type tests shall be classified as follows :

   i) Visual examination,

   ii) Performance test,

   iii) Abusive test (drop and topple, reverse voltage and transient)

   iv) Vibration test,

   v) Endurance test,

   vi) Damp heat cycling test,

   vii) Dry heat test, and

   viii) Corrosion resistance test.

b) Acceptance Test — The following shall constitute tests for acceptance.

   i) Visual examination,

   ii) Performance test, and

   iii) Endurance test.

c) Routine Test — The following shall constitute routine tests:

   i) Visual examination, and

   ii) Performance test.

6.1 Visual Examination

All flashers shall be examined for finish, workmanship and shall be free from visual defects.

6.2 Performance Test

6.2.1 *Test Requirements*

The flashers shall be connected in a standard test circuit as shown in Fig. 1. The ripple content in the test voltage source should not be more than 0·3 percent. Other provisions shall be as given in Table 1.

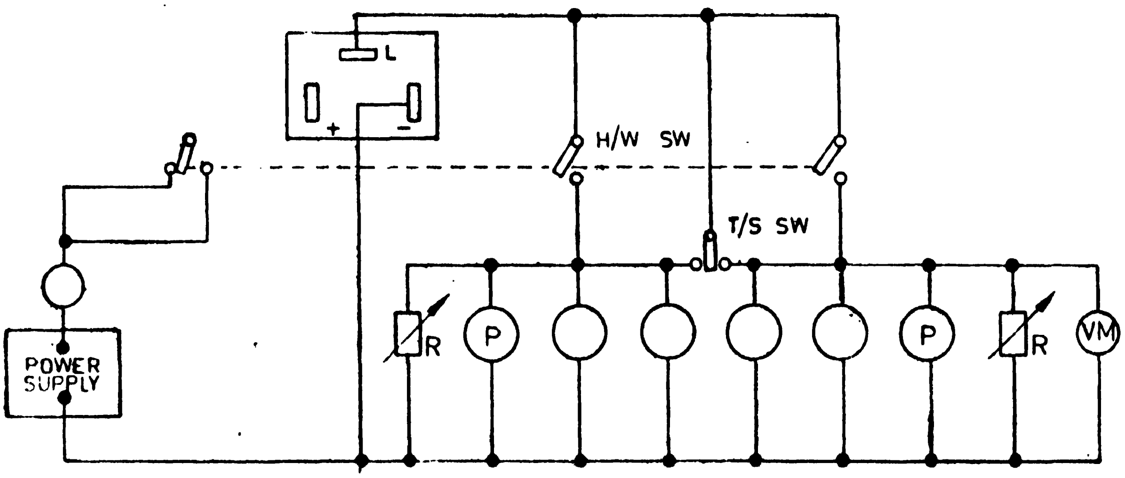

FIG. 1 STANDARD TEST CIRCUIT FOR FLASHERS

Table 1 Requirements for Performance Test

(*Clause* 6.2.1)

Rated Voltage	Voltage Range	Test Voltage	Nominal Lamp Load		
			Direction Watts	Hazard Watts	Pilot Lamp Watts
Volts	Volts	Volts			
6	5·5— 7·5	6·4 ± 0·05	42	—	1·2
12	11·0—15·0	12·8 ± 0·1	42	84	2·0
24	22·0—30·0	25·6 ± 0·2	42	84	4·0

6.2.1.1 With specified test voltage V applied to bulb terminals, the flashing rate shall be within the limits 70 to 100 flashes per minute. The test shall be carried out at room temperature of 27 ± 5°C.

6.2.1.2 Within the voltage range the flashing rate shall be within the limits of 60 to 120 flashes per minute. The flashing rate shall be measured over a period of one minute.

6.2.1.3 The electrical measuring instruments used during the test shall be of at least accuracy class 1·0 as recommended in IS 1248 (Part 1) : 1983.

6.2.2 The 'ON' Time to 'Total Cycle Time' (called 'percent on time') shall be 35 to 65 percent. The lamp shall be visibly dark during the 'OFF' period.

6.2.3 The voltage drop between input (B) and output (L) terminals of the flasher unit shall be less than 0·4 Volts for Direction Indicator Units and less than 0·5 Volts for Hazard Warning Units with appropriate lamp load and when the bulbs are 'ON'.

6.2.4 The time required before the flasher begins to work, after the voltage is applied to its input terminals (B and E) shall not be more than 1·0 seed for direction indicator unit and 1·5 sec for hazard warning units.

6.3 Drop and Topple Test

6.3.1 The drop and topple test shall be carried out according to **4.10** of IS 10250 : 1982 under the following conditions:

a) No. of drops 6
b) Drop height 1·0 metre

6.4 Reverse Voltage Test

6.4.1 The flasher unit shall be connected to a reversed 7 $^{+0}_{-0\cdot 5}$ V for 6 volts, 14 $^{+0}_{-1}$ V for 12 volts and 28 $^{+0}_{-2}$ V for 24 volts supply firstly for 5 sec without a load and then for 5 sec with a normal direction indicator load.

6.4.2 At the end of each of the above tests the test piece shall be examined. Any unit showing evidence of component defects, displacement of parts shall be considered to have failed. At the end of the test the flasher shall be able to operate for 60 to 120 flashes per minute when tested with appropriate terminal voltage and load.

6.5 Transient Test

6.5.1 The flasher shall be connected in a standard test circuit as shown in Fig. 2. The unit shall be connected to normal direction indicator bulb load and in parallel with a conventional ignition condition is given below:

a) Alternator speed : 5 000 RPM
b) Load : 36 Amps
c) Sparks per second : 150

Each unit was operated for 5 minutes with the battery and load disconnected from the alternator for 30 secs, in every minute. This shall produce transient spike on the positive supply line. At the end of the test flasher shall be able to operate for 60 to 120 flashes per minute with tested with appropriate bulks voltage and load.

6.6 Vibration Test

6.6.1 The vibration test shall be carried out according to **4.1** of IS 10250 : 1982 using the following conditions:

a) Displacement amplitude, mm ... 0·75
b) Frequency range, Hz ... 10-55—10
c) Total duration, hours ... 3

6.7 Endurance Test

6.7.1 Flasher units numbering 20 conforming to **6.2** to **6.2.4** shall be selected for endurance test. The test shall run on each flasher connected to an appropriate load and operated as per Table 2.

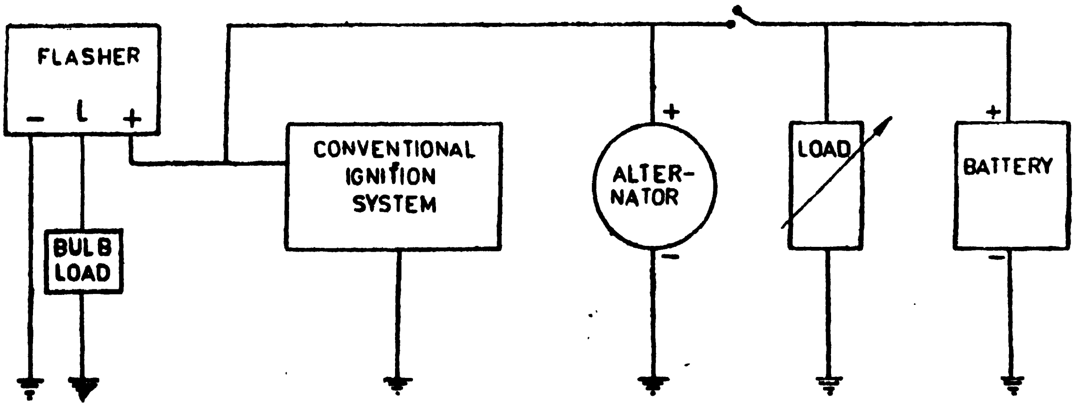

FIG. 2 CIRCUIT DIAGRAM FOR TRANSIENT TEST

Table 2 Requirements of Endurance Test

(*Clause* 6.7.1)

Mode	Operating Voltage (Volts)			Duration (Hours)
	6	12	24	
DI[1]	$7\,^{+0}_{0.5}$	$14\,^{+0}_{-1}$	$28\,^{+0}_{-2}$	100 Continuous
HW[2]	—	$14\,^{+0}_{-1}$	$28\,^{+0}_{-2}$	36 Continuous

[1] DI — Direction Indication

[2] HW — Hazard warning

The ambient temperature during this test shall be 27 ± 5°C.

6.7.2 After completion of endurance test, the flasher units shall not have any defects, when tested for requirements below:

a) The flashing rate shall be within the limits of 60 to 120 flashes per minute when tested with the appropriate test voltage and load.

b) The 'percent on time' with the appropriate test voltage and load within the limit 30 to 70 percent.

c) The voltage drop when tested according to **6.2.3** shall be within the values specified in the clause.

6.8 Damp Heat (Cycling) Test

6.8.1 The damp heat (cycling) test shall be carried out according to **4.3** of IS 10250 : 1982.

6.8.2 The flasher units when tested after recovery shall satisfy the requirements of **6.7.2.**

6.9 Dry Heat Test

The test shall be conducted according to **5.2** of IS 10250 : 1982.

6.9.1 The test shall be carried out a temperature of 70 ± 5°C. The flasher shall be tested in the switched 'OFF' condition.

6.9.2 The period of exposure shall be 24 hrs.

6.9.3 The recovery period shall be 1 hour.

6.9.4 The flasher units when tested after recovery shall satisfy the requirements of **6.7.2.**

6.10 Corrosion Resistance Test

The corrosion resistance test shall be carried out according to **4.8** of IS 10250 : 1982.

6.10.1 The temperature of the salt spray chamber shall be not less than 25°C.

6.10.2 At the end of the test, the flasher units when tested shall satisfy the requirements of **6.7.2.**

6.11 Overload Strength

6.11.1 With a voltage of 13 V or 26 V, the flasher shall be capable of resisting a maximum current of 25 A once only for 10 s between the input terminal and the output terminal considered (pilot lamp circuits excepted).

Before the test, the flasher terminals considered shall be shunted by 5 m max. With the resistor R3, the current shall be adjusted to 25 A_1 (*see* Fig. 3).

The shunt shall than be removed for the test.

7 MARKING

7.1 The flasher shall be marked with the following:

a) Name and/or trade-mark for source of manufacture,

b) Rated voltage,

c) Rated load,

d) Source of manufacture, and

e) Month and year of manufacture.

7.2 The terminals of the flasher shall be appropriately marked with the letter symbols L, B and E, standing for lamp, battery and Earth respectively. Alternatively any numerical indication of circuitary which is connected to the unit may be provided.

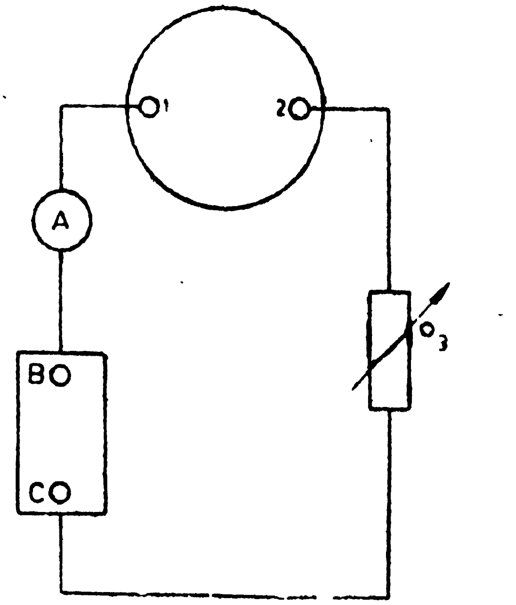

FIG. 3 WIRING DIAGRAM FOR THE OVER LOAD TESTING STRENGTH

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